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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,942	04/13/2000	Warren M. Farnworth	4161US (98-1265)	6934

7590 06/22/2006

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EXAMINER

LEE, BENNY T

ART UNIT PAPER NUMBER

2817

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/548,942	FARNWORTH, WARREN M.	
	Examiner	Art Unit	
	Benny Lee	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-26 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24, 25, 28-30, 31 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1 Apr 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Claims 28-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 28-30, it is noted that this claim, as amended, now requires the “semiconductor substrate” to include “an electrically insulative layer”. However, there does not appear to be any disclosure in the original specification to provide for a combination of the “semiconductor substrate” being “an electrically insulating layer” as presently recited in these claims, and thus this limitation has been treated as “new matter”.

However, if applicant does not believe the issues cited above are “new matter”, then an appropriate explanation is required to be provided, including pointing out where in the original disclosure, explicit and/or implicit support for the subject matter of the above cited claims can be found.

Claims 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 28, 29, 30, note that it is unclear whether the recited “electrically insulative layer” can properly depend from or properly further limit a “substrate” which as been previously defined as being a “semiconductor”. That is to say, a “semiconductor” has material properties which are materially different from that of “an electrically

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insulative layer” and as such would appear incompatible with its use as a “semiconductor substrate”. Clarification is needed.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lampen et al in view of Caillat et al (both of record).

Lampen et al in fig. 6 discloses a semi-conductive MMIC having a ground or voltage reference plane (68) disposed over substantially the entire surface of the MMIC. Moreover, note that the ground plane includes a plurality of slots (72) disposed therein in which respective short conductive traces or pads (70) are disposed. Furthermore, note that the traces are disposed such that the ground plane electrically isolates adjacent conductive traces. As evident from Fig. 7, the MMIC can be mounted to a substrate (26) of a circuit board through a plurality of connection means (52, 52A, 52B), which electrically connect the ground plane and conductive traces, respectively to corresponding conductive layers on the substrate. However, Lampen et al differs from the claimed invention in that the connection means are not explicitly disclosed as solder balls.

However, as taught by Caillat et al, the use of conductive spheres or balls for connecting a semi-conductive IC to a circuit board is recognized as conventional in the art.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have realized the connection means (52, 52A, 52B) of Lampen et al as solder balls or spheres as taught by Caillat et al. Such a modification would have been considered an obvious substitution of art recognized equivalent means of connecting a

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semiconductor circuit to a circuit board, thereby suggesting the obviousness of such a modification.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over the preceding rejection as applied to claim 24 above, and further in view of Quan (of record).

As described in either of the preceding rejections, the obvious combination of references meets the claimed invention except for the presence of a passivation layer, as claimed herein.

As described in previous Office actions Quan discloses that the use of passivation layers to isolate conductors on a substrate is well known in the art.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have further modified either of the above combinations to have included a passivation layer, such as taught by Quan. Such a modification would have provided the advantageous benefit of providing further electrical isolation of the electrical signal traces in the combination, thereby suggesting the obviousness of such a modification.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forbes et al (of record) in view of Lampen et al as modified by Caillat et al (all of record).

As described in previous Office actions, Forbes discloses an electronic system including a processor, memory device, input device, output device, data storage device, etc, but does not disclose such devices being semiconductor substrates having the recited conductive patterns connected by solder balls. As described in the preceding rejections, the formation of a semiconductor substrate having the recited conductive patterns and connected by solder balls was considered obvious for reason stated in these rejections.

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Accordingly, it would have been obvious to have realized any one of the circuit components in Forbes et al by the Lampen et al semiconductor substrate as modified by Caillat et al to have included solder balls. Such a modification would have been considered an obvious substitution of art recognized semiconductor structures, especially in view of the compatability of the semiconductor components in Forbes to the semiconductor structure in either combination, thereby suggesting the obviousness of such a modification.

Applicant's arguments filed 7 April 2006 have been fully considered but they are not persuasive.

Regarding the rejections claims 28-30 under 35 USC 112, first paragraph, (i.e. the “new matter” rejection), applicants’ comments have been considered, but, have been found unpersuasive. It should be noted that while the “substrate” may be either “semi-conductive” or “insulative”, it still does not appear that an embodiment exists which comprises the combination of the semi-conductive substrate having an “electrically insulative layer” such as recited in claims 28-30. Despite applicants’ numerous references to the generic nature of the “substrate” (e.g. as being semi-conductive, as being electrically insulative, etc), the lack of a particular embodiment comprising an electrically insulative layer disposed in conjunction with a semi-conductive layer is quite telling as to whether such an arrangement was ever contemplated by applicants’ as part of the original disclosure.

Regarding the prior art rejection of claims 24, 25 & 31, based in part on the Lampen reference, applicants’ have asserted that Lampen does not disclose the “voltage reference plane” provides a “continuous electrical connection around each of the plurality

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of signal trace slots” as recited in claim 24. In particular, it has been argued by applicants’ that “ground plane 68” does not form a “continuous electrical connection around the conductive traces or pads (70)”.

Contrary to applicants’ assertion, it should be noted that “ground plane (68)” is disclosed as a continuous conductive sheet providing a ground reference voltage plane and as such properly characterizes a voltage reference plane with a “continuous electrical connection”. Moreover, note that the continuous ground plane (68), includes opening therein (i.e. about the periphery of the continuous conductive sheet) which receive traces and/or pads (70) therein, and as such properly characterizes the “continuous electrical connection” being arranged “around” the “plurality of signal trace slots” by virtue of the opening therein for receipt of the traces or pads (70). Accordingly, the Lampen reference does indeed meet this aspect of the claimed invention, and thus the Caillat et al reference has not been relied on by the examiner to account for the “continuous electrical connection” feature. Likewise with regard to the subject matter of claims 25 & 31, the Lampen reference does indeed meet the “continuous electrical connection” limitation as explained above and therefore, the respective combination of prior reference, taken as a whole, would have rendered the claim obvious.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

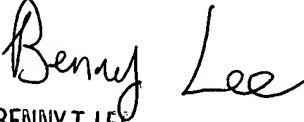
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

B. Lee


BENNY T. LEE
PRIMARY EXAMINER
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